

IRREVERSIBLI CHANGE

CLIMATE CHANGE AND NATURE LOSS COULD SOON CAUSE 'TIPPING POINTS' IN THE NATURAL WORLD

KEY MESSAGE

Environmental stresses could become so severe that large parts of the natural world are unable to maintain their current state, leading to abrupt and/or irreversible changes. These moments are called Earth system 'tipping points'. Five major tipping systems are already at risk of crossing tipping points at the present level of global warming: the Greenland and West Antarctic ice sheets, warm-water coral reefs, North Atlantic Subpolar Gyre circulation, and permafrost regions.



POSING THREATS

THESE TIPPING POINTS POSE THREATS OF A MAGNITUDE NEVER BEFORE FACED BY HUMANITY

These threats could materialise in the coming decades, and at lower levels of global warming than previously thought. They could be catastrophic, including global-scale loss of capacity to grow major staple crops. Triggering one Earth system tipping point could trigger another, causing a domino effect of accelerating and unmanageable damage. Tipping points show that the overall threat posed by the climate and ecological crisis is far more severe than is commonly understood.

02



GRIGGERING DESTRUCTION

THE EFFECTS OF TIPPING POINTS WILL BE TRANSMITTED AND AMPLIFIED THROUGHOUT OUR GLOBALISED WORLD

KEY MESSAGE

This will multiply crises in the same way that the COVID-19 pandemic caused cascading stress to societies and economic systems globally, with unequal and unjust consequences. These impacts could escalate to threaten the breakdown of economic, social and political systems, triggering destructive tipping points in societies experiencing stresses beyond their ability to cope.



JRGENT ACTION

STOPPING THESE THREATS IS POSSIBLE BUT REQUIRES URGENT GLOBAL ACTION

Global governance is currently inadequate to minimise tipping point threats and to do so equitably. Governance is needed across multiple scales to address the different drivers, potentially rapid changes, and diverse, often irreversible, impacts of tipping points. An immediate priority for governance actors is to set an agenda for developing this framework. Governance must also guard against counterproductive reactions to tipping point threats, such as the misguided reliance on speculative solar geoengineering approaches.

KEY MESSAGE



EVEN WITH URGENT GLOBAL ACTION, SOME EARTH SYSTEM TIPPING POINTS MAY BE UNAVOIDABLE

Some Earth system tipping points may still be triggered in the time it takes us to undertake global emergency action. Mitigating risk is still possible by reducing vulnerability, and becomes ever more urgent, because each manifestation of a tipping point threat diverts attention and resources to disaster response, eroding away some of our agency to tackle the underlying drivers. This increases the risk of triggering more Earth system tipping points, creating a vicious cycle.

KEY MESSAGE



ACCELERATING TRANSFORMATIO

'POSITIVE TIPPING POINTS' CAN ACCELERATE A TRANSFORMATION TOWARDS SUSTAINABILITY

A scale and pace of action necessary to mitigate tipping point threats can be achieved, partly because similar tipping dynamics exist in societies, and can work in our favour. These positive tipping point opportunities can be exploited, whereby coordinated strategic interventions can lead to disproportionately large and rapid benefits that accelerate the transition of societies toward sustainability. This is already happening in some cases. For example, targeted actions by innovators, governments, investors and companies have created economies of scale that are now propelling the exponential uptake of renewable energy worldwide, which has reached or exceeded cost parity with fossil fuel power generation.





CHANGE

ONE POSITIVE TIPPING POINT CAN TRIGGER OTHERS, CREATING A DOMINO EFFECT OF CHANGE

For example, as electric vehicles pass a positive tipping point towards becoming a dominant form of transport, this reduces the costs of battery technology. Lower-cost batteries in turn provide essential storage capacity to reinforce the positive tipping point to renewable power, which can trigger another tipping point in producing green ammonia for fertilisers, shipping, and so on.

KEY MESSAGE



COORDINATE ACTION

TRIGGERING POSITIVE TIPPING POINTS REQUIRES COORDINATED ACTION THAT CONSIDERS EQUITY AND JUSTICE

Many areas of society have the potential to be 'tipped', including politics, social norms and mindsets. But these opportunities are not realised on their own. Concerted and coordinated action is usually needed to create the enabling conditions for triggering positive tipping points. Once near a tipping point, it may even be triggered by relatively small groups with targeted action. Appropriate governance can enable this process and is required to equitably manage its knockon effects, so that all parts of society can engage with and benefit from tipping point opportunities.

KEY MESSAGE



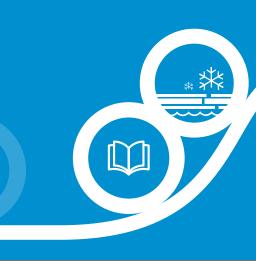


A DEEPER UNDERSTANDING

WE NEED A DEEPER UNDERSTANDING OF TIPPING POINTS – BUT WITHOUT DELAYING ACTION

Improving understanding of tipping point threats and opportunities in both nature and societies is an urgent priority to support governance and decision making, with the aim to limit harm and support transformations to sustainability. But this quest for knowledge must not delay or slow action. We know enough to identify that the threat of Earth system tipping points demands an urgent response. Indeed, our best models likely underestimate tipping point risks. The world is largely flying blind into this vast threat.

KEY MESSAGE





A POWERFUL

POSITIVE TIPPING POINTS CAN CREATE A POWERFUL COUNTER EFFECT TO THE RISK OF EARTH SYSTEM TIPPING POINTS CASCADING OUT OF CONTROL

The ultimate risk presented by Earth system tipping points is that they cascade, creating a growing momentum that undermines our collective ability to deal with the vicious cycle of escalating consequences. But both protecting and enhancing our collective ability to realise positive tipping point opportunities – even as damaging events escalate – can create a powerful counter effect, avoiding spiralling disaster. Doing so means urgently making our societies more resilient to this new era of rapid change and implementing equitable global governance.



